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ANSWER 1 OF 1 WPIDS COPYRIGHT 1998 DERWENT INFORMATION LTD
ACCESSION NUMBER: 88-265069 [38] WPIDS
DOC. NO. CPI: C88-117950
TITLE: Composite resin-based material - mfd. by
polymerising monomer contg. dispersed
layer-silicate which has been ion-exchanged with
onium salt contg. polymer-forming gps..
DERWENT CLASS: A18 A23 A60 E19
INV: (S): DURAUCHI, T; FUJIMOTO, M; FUKUSHIMA, Y; KOJIMA, Y;
MIZUTANI, T; SATO, N; USUKI, A; FUKUMORI, K;
KAMIGAITO, O; KURAUCHI, T
PATENT ASSIGNEE(S): (TOYW) TOYOTA CHUO KENKYUSHO KK
COUNTRY COUNT: 3
PATENT INFORMATION:

| PATENT NO | KIND | DATE | WEEK | LA | PG |
|-------------|------|----------------|------|----|-----|
| DE 3806548 | A | 880915 (8838)* | | | 17 |
| JP 63215775 | A | 880908 (8842) | | | |
| JP 63221168 | A | 880914 (8843) | | | |
| JP 01198645 | A | 890810 (8938) | | | |
| US 4889885 | A | 891226 (9008) | | 13 | <-- |
| JP 06084456 | B2 | 941026 (9441) | | 9 | |
| JP 07030252 | B2 | 950405 (9518) | | 6 | |
| JP 07030253 | B2 | 950405 (9518) | | 5 | |
| DE 3806548 | C2 | 961002 (9644) | | 24 | |

APPLICATION DETAILS:

| PATENT NO | KIND | APPLICATION | DATE |
|-------------|------|---------------|--------|
| DE 3806548 | A | DE 88-3806548 | 880301 |
| JP 63215775 | A | JP 87-49630 | 870304 |
| JP 63221168 | A | JP 87-53706 | 870309 |
| JP 01198645 | A | JP 87-325049 | 871222 |
| US 4889885 | A | US 88-164217 | 880304 |
| JP 06084456 | B2 | JP 87-325049 | 871222 |
| JP 07030252 | B2 | JP 87-49630 | 870304 |
| JP 07030253 | B2 | JP 87-53706 | 870309 |
| DE 3806548 | C2 | DE 88-3806548 | 880301 |

FILING DETAILS:

| PATENT NO | KIND | PATENT NO |
|-------------|-------------|-------------|
| JP 06084456 | B2 Based on | JP 01198645 |
| JP 07030252 | B2 Based on | JP 63215775 |
| JP 07030253 | B2 Based on | JP 63221168 |

PRIORITY APPLN. INFO: JP 87-49630 870304; JP 87-53706 870309; JP
87-260269 871015; JP 87-325049 871222

AB DE 3806548 A UPAB: 930923

(1) Composite material (I) comprises a resin (II) (not polyamide resin) contg. a uniformly dispersed layer silicate (III) of layer thickness 0.7-1.2 nm and interlayer sepn. of at least 3 nm. (2) Prod. of (I) comprises (a) ion-exchange of layer-type clay (III) of cation-exchange capacity 50-200 equiv./100 g with an onium salt, (b) mixing with monomer or oligomer of (II), (c) polymerisation and (d) mastication with a solid rubber.

At least one component of (II) is vinyl resin, heat-hardening resin, polyester or rubber; (III) is negatively-charged, a negative charge having an area of 0.25-2 nm² on the surface; amt. of (III) is 0.05-150 pts.wt./100 pts.wt. (II); (I) contains a solid rubber (IV) contg. a dissolved complex of liq. rubber (V) with positive gps. contg. dispersed (III); (V) has mol.wt. above 1000; complex contains 20-1000 pts.wt. (III)/100 pts.wt. (V); (V) is natural or synthetic rubber or thermoplastic elastomer; (IV) is a diene rubber of mol.wt. not below 10,000; amt. of complex is 1-10 pts.wt./100 pts.wt. (IV); (I) also contains carbon black, pref. 0-100 pts.wt./100 pts.wt. (IV). (III) and onium salt are mixed in water or water/solvent mixt.; (III) is smectite (pref. montmorillonite, saponite, beidellite, nontronite, hectorite or stevensite), vermiculite or halloysite; salt is ammonium, pyridinium, sulphonium or phosphonium salt; mol. structure of salt contains polymerisation initiating, basic resin and crosslinking units, pref. an initiator unit and COOH, amino or NCO gps., or hardener unit and aryl, allyl or amino gps.

USE/ADVANTAGE - (I) is useful for prodn. of vehicle and craft parts and as a constructional material. (I) has superior mechanical properties and improved thermal, chemical and hydrolytic stability w.r.t. prior-art materials.

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LS0 ANSWER 1 OF 1 INPADOC COPYRIGHT 1998 EPO

PRAI 1: JP 87-49630 870304

Men (1)
 AN 15268432 INPADOC UW 8912 UP 890401
 TI VERBUNDATERIAL UND VERFAHREN ZU DESSEN HERSTELLUNG.
 IN USUKI, ARIMITSU; MIZUTANI, TADASHI, NAGOYA, AICHI, JP; FUKUSHIMA, YOSHIKI, AICHI, JP; FUJIMOTO, MEGUMI; FUKUMORI, KENZO, NAGOYA, AICHI, JP; KOJIMA, YOSHITSUGU, AICHI, JP; SATO, NORIO; KURAUCHI, TOSHIO; KAMIGAITO, OSAMI, NAGOYA, AICHI, JP
 INS USUKI ARIMITSU; MIZUTANI TADASHI; FUKUSHIMA YOSHIKI; FUJIMOTO MEGUMI; FUKUMORI KENZO; KOJIMA YOSHITSUGU; SATO NORIO; KURAUCHI TOSHIO; KAMIGAITO OSAMI
 INA JP
 PA KABUSHIKI KAISHA TOYOTA CHUO KENKYUSHO, AICHI, JP
 PAS TOYODA CHUO KENKYUSHO KK
 PAA JP
 DT Patent
 PIT DEA1 DOCUMENT LAID OPEN (FIRST PUBLICATION)
 PI DE 3806548 A1 880915
 AI DE 88-3806548 A 880301
 PRAI JP 87-49630 A 870304
 JP 87-53706 A 870309
 JP 87-260269 A 871015
 JP 87-325049 A 871222
 OSCA 110:58842
 OSDW 88-265069
 IC ICM (4) C08J005-24
 ICS (4) C08J005-04; (4) C08K003-04; (4) C08K003-34; (4) C08L009-00; (4) C08L033-14; (4) C08L067-00; (4) C04B026-02
 ICA (4) C09D007-12; (4) C10M113-10; (4) C10M113-16; (4) C10M119-06; (4) C10M119-16
 ICI (4) C04B026-02, (4) C04B024-24, (4) C04B022-06, (4) C04B014-04
 STA T
 LS P PUBLICATION NUMBER
 870304 AA A PRIORITY (PATENT APPLICATION)
 JP 87 49630 870304
 870309 AA A PRIORITY (PATENT APPLICATION)
 JP 87 53706 870309
 1015 AA A PRIORITY (PATENT APPLICATION)
 JP 87 260269 871015
 871222 AA A PRIORITY (PATENT APPLICATION)
 JP 87 325049 871222
 880301 AE A DOMESTIC APPLICATION (PATENT APPLICATION).
 DE 88 3806548 880301
 880915 A1 + LAYING OPEN FOR PUBLIC INSPECTION
 950216 8110 + REQUEST FOR EXAMINATION PARAGRAPH 44
 950720 8128 NEW PERSON/NAME/ADDRESS OF THE AGENT
 BLUMBACH, KRAMER & PARTNER, 81245 MUENCHEN
 961002 D2 + GRANT AFTER EXAMINATION
 970403 8364 + NO OPPOSITION DURING TERM OF OPPOSITION

Member (2)

AN 15298739 INPADOC UW 8908 UP 890304
 TI COMPOSITE MATERIAL AND PRODUCTION THEREOF.
 IN USUKI ARIMITSU; MIZUTANI TADASHI; FUKUSHIMA YOSHIKI; KURAUCHI NORIO; UEGAKITO OSAMI
 INS USUKI ARIMITSU; MIZUTANI TADASHI; FUKUSHIMA YOSHIKI; KURAUCHI NORIO; UEGAKITO OSAMI
 PA TOYOTA CENTRAL RES & DEV LAB INC
 PAS TOYOTA CENTRAL RES & DEV
 DT Patent
 PIT JPA2 DOCUMENT LAID OPEN TO PUBLIC INSPECTION
 PI JP 63215775 A2 880908
 AI JP 87-49630 A 870304
 PRAI JP 87-49630 A 870304
 OSJP 130003C000124
 IC ICM (4) C08L101-00
 ICS (4) C08J005-00; (4) C08K007-00
 STA T

Member (3)

AN 16890728 INPADOC UW 9004 UP 900203
 TI COMPOSITE MATERIAL CONTAINING A LAYERED SILICATE.
 IN USUKI, ARIMITSU; MIZUTANI, TADASHI; FUKUSHIMA, YOSHIKI; FUJIMOTO, MEGUMI; FUKUMORI, KENZO; KOJIMA, YOSHITSUGU; SATO, NORIO; KURAUCHI, TOSHIO; KAMIGAITO, OSAMI
 INS USUKI ARIMITSU; MIZUTANI TADASHI; FUKUSHIMA YOSHIKI; FUJIMOTO MEGUMI; FUKUMORI KENZO; KOJIMA YOSHITSUGU; SATO NORIO; KURAUCHI TOSHIO; KAMIGAITO OSAMI
 INA JP
 PA KABUSHIKI KAISHA TOYOTA CHUO KENKYUSHO
 PAS TOYODA CHUO KENKYUSHO KK

PAA .JP
 DT Patent
 PIT USA UNITED STATES PATENT
 PI US 4889885 A 891226
 AI US 88-164217 A 880304
 PRAI JP 87-49630 A 870304
 JP 87-53706 A 870309
 JP 87-260269 A 871015
 JP 87-325049 A 871222
 IC ICM (4) C04B026-02
 ICS (4) C08K003-04; (4) C08L009-00; (4) C08L067-00
 NCL 524445; X523521; X524449; X524450; X524451; X524534; X524789;
 X524791; X524856
 LS P PUBLICATION NUMBER
 870304 AA A PRIORITY (PATENT)
 JP 87 49630 870304
 870309 AA A PRIORITY (PATENT)
 JP 87 53706 870309
 871015 AA A PRIORITY (PATENT)
 JP 87 260269 871015
 871222 AA A PRIORITY (PATENT)
 JP 87 325049 871222
 880304 AE A APPLICATION DATA (PATENT)
 US 88 164217 880304
 891226 A PATENT

Member (4)

AN 23629856 INPADOC UW 9521 UP 950603
 IN USUKI ARIMITSU; MIZUTANI TADASHI; FUKUSHIMA YOSHIAKI; KURAUCHI
 NORIO; UEGAKITO OSAMI
 INS USUKI ARIMITSU; MIZUTANI TADASHI; FUKUSHIMA YOSHIAKI; KURAUCHI
 NORIO; UEGAKITO OSAMI
 PA TOYODA CHUO KENKYUSHO KK
 PAS TOYODA CHUO KENKYUSHO KK
 DT Patent
 PIT JPB4 PUBLISHED EXAMINED PATENT APPLICATION
 PI JP 07030252 B4 950405
 AI JP 87-49630 A 870304
 PRAI JP 87-49630 A 870304
 IC ICM (6) C08L101-00
 ICS (6) C08J005-00; (6) C08K003-00; (6) C08K007-00
 STA T

Member (5)

AN 515808 INPADOC UW 9640 UP 961012 EW 9640 ED 961012
 TI VERBUNDATERIAL UND VERFAHREN ZU DESSEN HERSTELLUNG.
 IN USUKI, ARIMITSU, NAGOYA, AICHI, JP; MIZUTANI, TADASHI, NAGOYA,
 AICHI, JP; FUKUSHIMA, YOSHIAKI, AICHI, JP; FUJIMOTO, MEGUMI,
 NAGOYA, AICHI, JP; FUKUMORI, KENZO, NAGOYA, AICHI, JP; KOJIMA,
 YOSHITSUGU, AICHI, JP; SATO, NORIO, NAGOYA, AICHI, JP; KURAUCHI,
 TOSHIO, NAGOYA, AICHI, JP; KAMIGAITO, OSAMI, NAGOYA, AICHI, JP
 INS USUKI ARIMITSU; MIZUTANI TADASHI; FUKUSHIMA YOSHIAKI; FUJIMOTO
 MEGUMI; FUKUMORI KENZO; KOJIMA YOSHITSUGU; SATO NORIO; KURAUCHI
 TOSHIO; KAMIGAITO OSAMI
 INA JP
 PA KABUSHIKI KAISHA TOYOTA CHUO KENKYUSHO, AICHI, JP
 PAS TOYODA CHUO KENKYUSHO KK
 PAA JP
 DT Patent
 PIT DEC2 PATENT SPECIFICATION (SECOND PUBL.)
 PI DE 3806548 C2 961002 D2
 AI DE 88-3806548 A 880301
 PRAI JP 87-49630 A 870304
 JP 87-53706 A 870309
 JP 87-260269 A 871015
 JP 87-325049 A 871222
 IC ICM (6) C08J005-24
 ICS (6) C08J005-04; (6) C08K003-04; (6) C08K003-34; (6) C08L009-00;
 (6) C08L033-14; (6) C08L067-00; (6) C04B026-02
 LS see above
 PRAI 2: JP 87-53706 870309

Duplicate

PI DE 3806548 A1 880915

Member (6)

AN 15355961 INPADOC UW 8908 UP 890304
 TI COMPOSITE MATERIAL AND PRODUCTION THEREOF.
 IN USUKI ARIMITSU; MIZUTANI TADASHI; FUJIMOTO SHIGERU; KURAUCHI NORIO;
 UEGAKITO OSAMI
 INS USUKI ARIMITSU; MIZUTANI TADASHI; FUJIMOTO SHIGERU; KURAUCHI NORIO;
 UEGAKITO OSAMI
 PA TOYOTA CENTRAL RES & DEV LAB INC
 PAS TOYOTA CENTRAL RES & DEV
 DT Patent
 PIT JPA2 DOCUMENT LAID OPEN TO PUBLIC INSPECTION
 PI JP 63221168 A2 880914

AI JP 87-53706 A 870309
PRAI JP 87-53706 A 870309
OSJP 130015C000041
IC ICM (4) C08L101-00
ICS (4) C08K003-00; (4) C08K007-00
STA T

Duplicate

PI 3 4889885 A 891226

Member (7)

AN 23629855 INPADOC UW 9521 UP 950603
IN USUKI ARIMITSU; MIZUTANI TADASHI; FUJIMOTO SHIGERU; KURAUCHI NORIO;
UEGAKITO OSAMI
INS USUKI ARIMITSU; MIZUTANI TADASHI; FUJIMOTO SHIGERU; KURAUCHI NORIO;
UEGAKITO OSAMI
PA TOYODA CHUO KENKYUSHO KK
PAS TOYODA CHUO KENKYUSHO KK
DT Patent
PIT JPB4 PUBLISHED EXAMINED PATENT APPLICATION
PI JP 07030253 B4 950405
AI JP 87-53706 A 870309
PRAI JP 87-53706 A 870309
IC ICM (6) C08L101-00
ICS (6) C08J005-00; (6) C08K003-00; (6) C08K007-00
STA T

Duplicate

PI DE 3806548 C2 961002

PRAI 3: JP 87-260269 871015

Duplicate

PI DE 3806548 A1 880915

Member (8)

AN 16350625 INPADOC UW 9004 UP 900203
TI RUBBER COMPOSITION.
IN FUKUMORI KENZO; USUKI ARIMITSU; KOJIMA YOSHITSUGU; FUJIMOTO
SHIGERU; SATO NORIO
INS FUKUMORI KENZO; USUKI ARIMITSU; KOJIMA YOSHITSUGU; FUJIMOTO
SHIGERU; SATO NORIO
PA TOYOTA CENTRAL RES & DEV LAB INC
PAS TOYOTA CENTRAL RES & DEV
DT Patent
PIT JPA2 DOCUMENT LAID OPEN TO PUBLIC INSPECTION
PI JP 01198645 A2 890810
AI JP 87-325049 A 871222
PRAI JP 87-260269 A1 871015
OSJP 130501C000025
IC ICM (4) C08L021-00
ICS (4) C08K009-00; (4) C09C001-48
STA T

Duplicate

PI US 4889885 A 891226

Duplicate

PI DE 3806548 C2 961002

Member (9)

AN 23093087 INPADOC UW 9737 UP 970920
IN FUKUMORI KENZO; USUKI ARIMITSU; KOJIMA YOSHITSUGU; FUJIMOTO
SHIGERU; SATO NORIO
INS FUKUMORI KENZO; USUKI ARIMITSU; KOJIMA YOSHITSUGU; FUJIMOTO
SHIGERU; SATO NORIO
PA TOYODA CHUO KENKYUSHO KK
DT Patent
PIT JPB4 PUBLISHED EXAMINED PATENT APPLICATION
PI JP 06084456 B4 941026
AI JP 87-325049 A 871222
PRAI JP 87-325049 A 871222
JP 87-260269 A 871015
IC ICM (5) C08L021-00
ICS (5) C08K003-34
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PRAI 4: JP 87-325049 871222

Dupl:

PI 3806548 A1 880915

Duplicate

PI US 4889885 A 891226

Duplicate

PI DE 3806548 C2 961002

Duplicate

PT. JP 06084456

B4 941026

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